(No Model.)

C. SCHNETZER.

VEGETABLE SLICER.

No. 436,022. Fig 1. Patented Sept. 9, 1890.

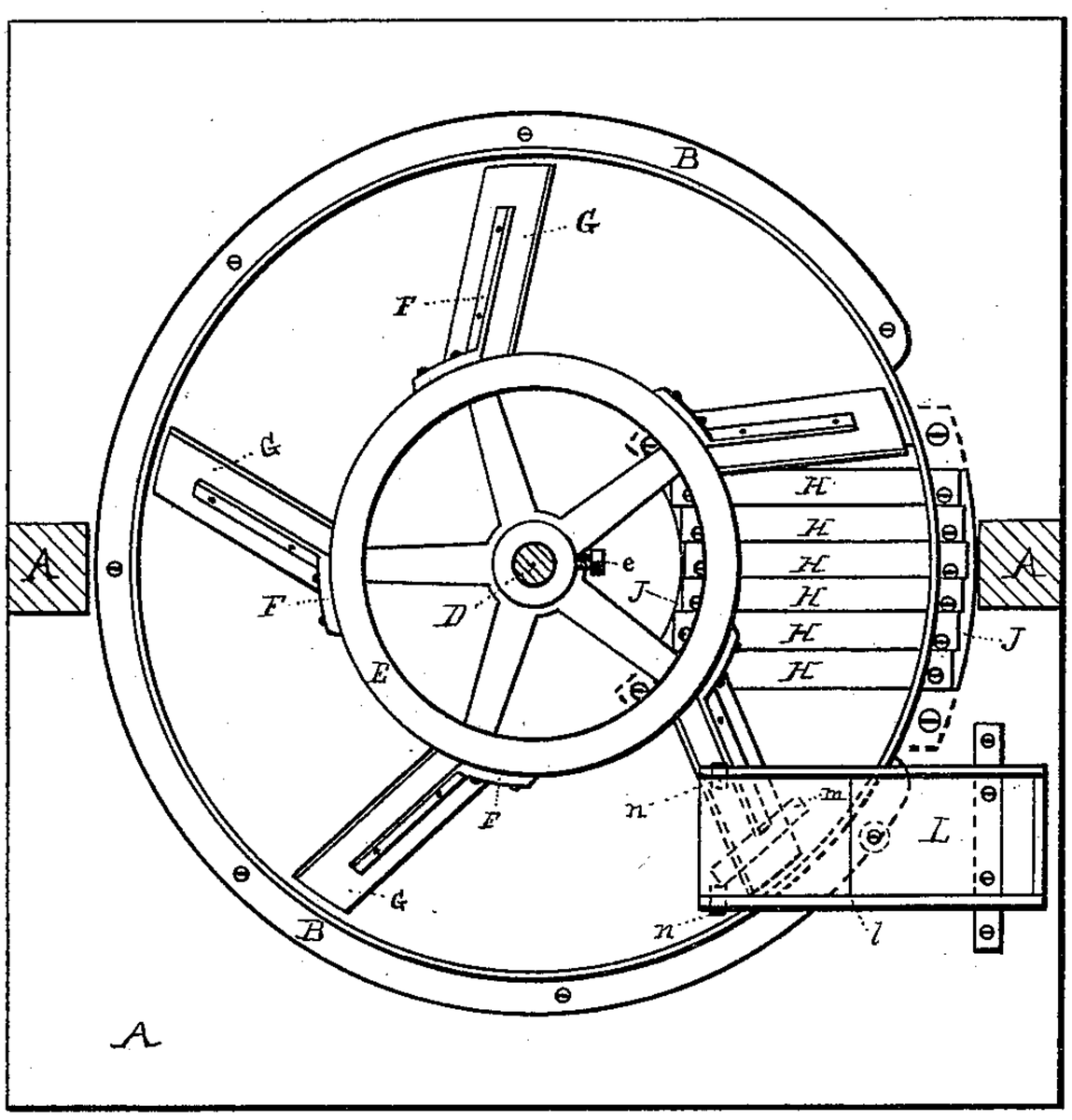


Fig 3.

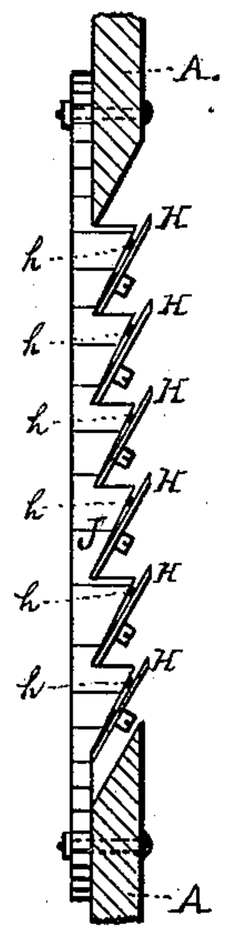


Fig 4.

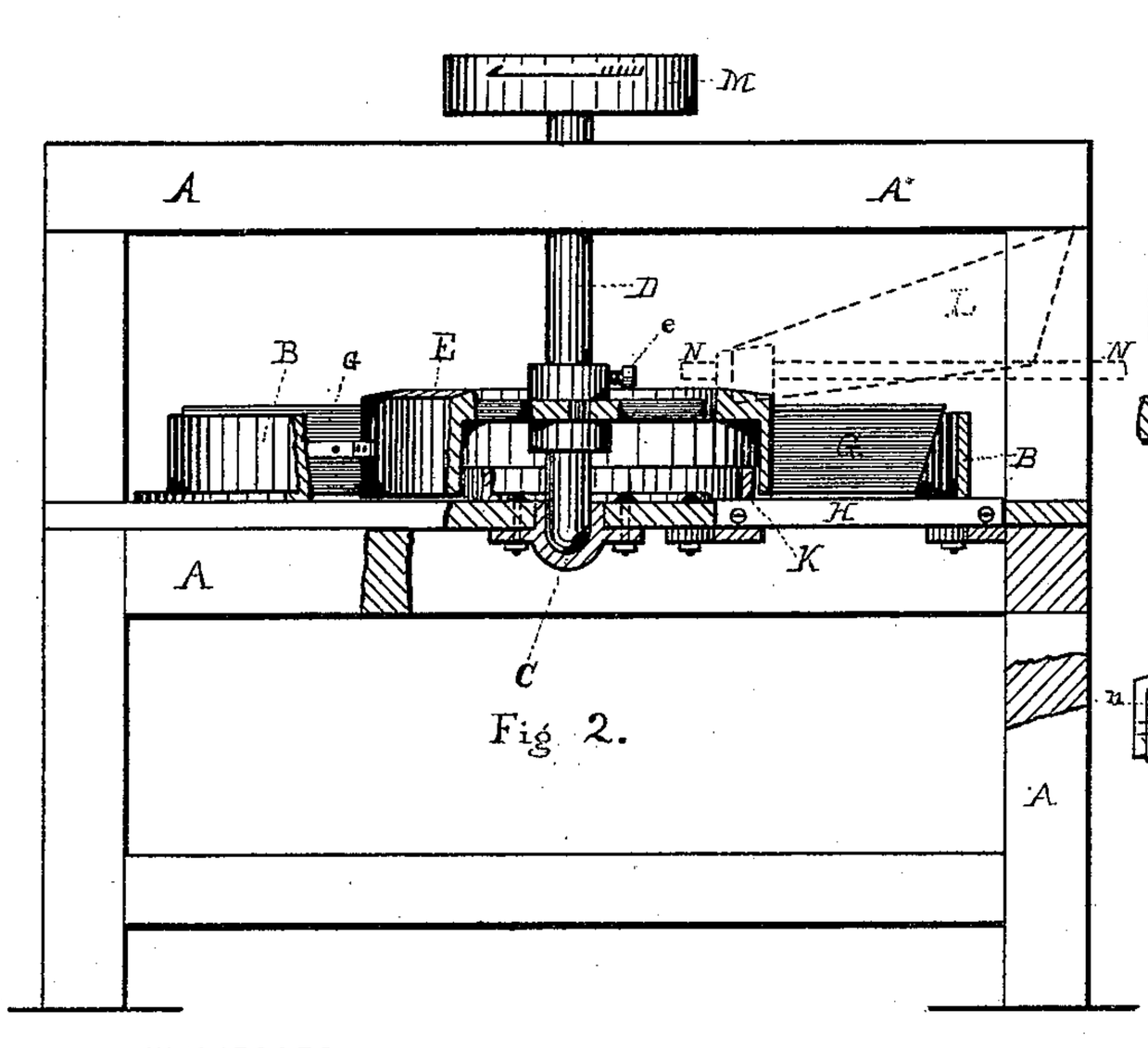
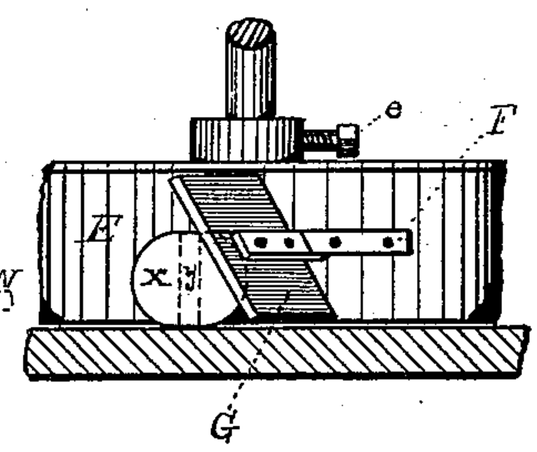


Fig 2.



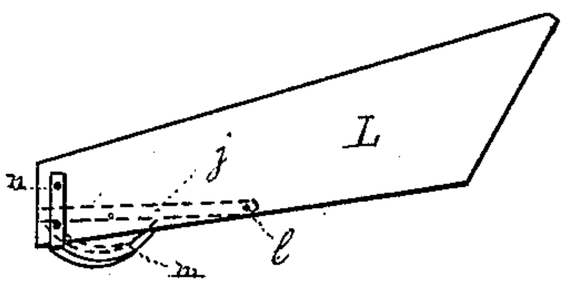


Fig 5.

WITNESSES:
James B. Wilson
Fred H. Sontag

INVENTOR
Conrad Schnetzer
BY
Howard L. Osgood
ATTORNEY

UNITED STATES PATENT OFFICE.

CONRAD SCHNETZER, OF ONTARIO CENTRE, NEW YORK, ASSIGNOR TO OSCAR F. NASH AND CHAS. J. NASH, OF SAME PLACE.

VEGETABLE-SLICER.

SPECIFICATION forming part of Letters Patent No. 436,022, dated September 9, 1890.

Application filed February 15, 1889. Serial No. 300,023. (No model.)

To all whom it may concern:

Be it known that I, CONRAD SCHNETZER, a citizen of the United States, residing at Ontario Centre, in the county of Wayne and State of New York, have invented a certain new and useful Improvement in Vegetable-Slicers, of which the following is a specification.

My invention relates to improvements in rotary vegetable-slicers, in which the vegetable or material to be sliced is swept over and through a series of knives, and in which such vegetable or material may be sliced in quantity or singly, as desired, without handling.

In the drawings forming part of this specification, and to which reference is hereby had, Figure 1 shows a plan view of my slicer as seen from above. Fig. 2 shows a side view thereof having parts broken away to show the inner construction of the same. Fig. 3 shows one of the plates to which the slicing-knives are attached. Fig. 4 shows a part of the central wheel of my slicer with one of the sweeps attached, and Fig. 5 shows the form and operation of the hopper.

Similar letters refer to similar parts throughout the several views.

The table and frame A constitute the frame-work of the machine. Upon it is placed the circular rim B, which constitutes the outer containing-rim of the apparatus. To the under side of the table is fixed the bearing C. In this rests the end of the shaft D. Upon this shaft and fastened thereto by any suitable means—such as the set-screw *e*—is fixed a flanged wheel E. To this flanged wheel are fastened a suitable number of arms F F. To these arms are fastened in any suitable manner the sweeps G G. I prefer to fasten these sweeps to iron arms F F by screws inserted through holes in said arms and passing into the sweeps; but any other suitable method may be employed. The iron arms F F are bolted to the flanged wheel E in any suitable manner and extend from the periphery thereof at an angle of about thirty degrees from the radius, being bent forward in the direction in which the wheel is to move, and the sweeps G G are set, as shown in Figs. 1, 2, and 4, at an angle of about forty-five degrees with the surface of the table A. Sweeps set at other angles may be used in my device.

Through the table A is cut an opening of any suitable size, in which the knives H H are set at a suitable angle with the plane of the table A by means of the stepped plates J J. These plates may be fastened to the table in any suitable manner, and the ends of the knives H H are fastened to them by screws, as shown in Figs. 1 and 3, or otherwise. The knives H H may be set up to increase the depth of cut by means of small pieces of metal *h h* inserted between them and the stepped plates J J, as shown in Fig. 3. The middle one of the knives H H is set so that its cutting-edge is slightly above the plane of the table A and is in a line continuous with a radius of the wheel E, and the edges of all the other knives are set parallel to that of the middle knife. In other words, the edges of all the knives are set parallel to a radius of the wheel E.

Any suitable number of knives may be used in this machine, and, depending upon its size, there may be two, or even more, sets of knives to perform the slicing operation, which may be set in suitable apertures through the table A. The rim of the flanged wheel E extends close to the surface of the table A, and close within the flange of the wheel E the circular rim K, Fig. 2, is fastened to the table A. The stepped plates J J are placed, respectively, outside the rim B and inside the rim K, as shown in Fig. 1.

To the frame of the machine, in any suitable manner, is attached the hopper or chute L, Figs. 1, 2, and 5, which is so set as to drop vegetables placed in it into the channel between the rim B and the flange of the wheel E. The portion of the bottom of the hopper nearest the center of the machine is a loose board *j*, which is pivoted, as shown in Fig. 5, at *l*, and on the bottom of the loose and pivoted board *j* is fixed a lug *m*. The lower edge of this lug is in its longitudinal section oval, or nearly so, in the form preferred by me, and is so fastened to the movable board *j* that the longitudinal section of the lug shall be at right angles to the radius of the wheel E. Other methods of actuating or tripping the

board *j* are evident. The movable board *j* may be prevented from dropping below the sides of the hopper by hooks *n* or by any other suitable means. The shaft D is supported, as above stated, by the bearings C and by a bearing in the frame A, as shown in Fig. 2. By means of the set-screw *e*, or by other means suitable for the same purpose, the flanged wheel E may be set up and down upon the shaft D, so that the wear of the lower edges of the sweeps G G may be taken up. The flanged wheel E may be rotated in any suitable manner, as by the pulley M, Fig. 2, or the upper edge of the flange E may be provided with cogs which gear into a small cog-wheel, the shaft of which, as shown at N, Fig. 2, extends out through the vertical standard of the frame A.

The operation of my device is as follows, (I illustrate it with reference to the slicing of apples:) The apples are first cored and peeled. They are then placed in quantity in the hopper L and slide down the lower surface thereof until they reach the movable board *j*. The wheel E is rotated in the proper direction. When one of the sweeps G meets the lug *m* of the movable board *j*, said board is quickly lifted up and dropped and shakes loose the apples resting upon it. The apples then drop into the annular channel between the flange E and the rim B. As the wheel moves around, each apple is swept over the surface of the table in the annular channel, and it is found that when the sweeps move at the proper speed the apple tends to settle itself and slide in the position shown at *x*, Fig. 4, with the core-hole *y* vertical to the plane of the table. An apple after being peeled is approximately spherical, and is slippery by reason of the juice on its surface. It therefore slides and rolls easily in the channel when moved by the sweeps. Hence, unless and until the apple settles in a position of stable equilibrium and slides in the channel in this position, it rolls over the knives without being sliced, for if it is in contact with the sweep it slips on the surface of the sweep, and thus, being free to roll if a knife catches it, it simply turns over, and in doing so is released from the edge of the knife. In its further course around the channel the apple will roll over, and will ultimately, and before being sliced, find the desired position—namely, with the core-hole vertical to the plane of the table. The flat spaces in the annular channel unoccupied by the sets of knives thus have an important function in the operation of my device, since if these spaces are made of suitable length and the sweeps move at a speed not too great the apple is rolled over until it finds a flat space upon itself on which it may slide until it meets the slicing-knives. This flat space upon a cored apple would be the end of the core-hole, as shown in Fig. 4. When the apple meets the knives H H, it retains this same position, and is sliced by being pushed against the edges of the successive knives by the sweep G. The slices are found to be made in a plane at right angles with the core-hole *y* and the slices are found to be of very uniform thickness. In the preferred form shown and described herein the knives are set parallel to each other across the bottom of the channel and one of them is in line with a radius of the wheel E. The apple is at first forced to slide against and along the edges of the successive knives, which it meets in a direction tending outward toward the rim B. When it meets said rim or is checked by the sweep becoming parallel to a knife which is slicing the apple, by this arrangement of parts it then slides inward toward the flange E, thus producing a sliding or shearing cut. The angle of the circularly-moving sweep as it moves over the series of parallel knives changes with reference to each successive knife. In other words, the angle of the sweep with a knife which it is crossing is different from the angle at which it crossed the next preceding knife. This change of angle causes the apple to move first outward toward the rim B, then inward toward the flange E, thus producing the sliding or shearing cut just mentioned. In fact, instead of having the knives parallel, as in the preferred form shown and described, this change of angle may be exaggerated by having the knives set in lines radiating toward the wheel E from a point outside the rim B in a produced radius of the wheel, the principle being to cause the angle between the knives and the sweep to have a constant decrease up to a certain point and then a constant increase. I use knives set in any of these ways and avoid the use of knives set in lines radiating from the center of the wheel E, inasmuch as this latter arrangement does not produce the long shearing cut which I consider desirable. It will thus be seen that this arrangement of parallel knives or knives radiating from a point outside the channel, in combination with sweeps moving over them with a circular motion, produces a different effect from an arrangement in a rotary slicer, where the knives are radial, or substantially so, from the center of the machine, and produces a still different effect from an arrangement where the knives are parallel and the movement of the sweeps is in a straight line. The slices thus made drop through between the knives into a suitable receptacle beneath the table. The stepped plates J J are placed, respectively, inside the rim K and outside the rim B, so that there may be clear knife-edges within the channel between the flange E and the rim B. The purpose of the rim K is to prevent particles of the sliced vegetable from being forced in toward the center of the machine.

It is well in the construction of this machine to make the sweeps G G wider from the top to the bottom than it would at first appear necessary, in order that the wear of their lower edges may be taken up by setting the

flanged wheel E lower toward the surface of the table A.

I am not aware that any machine has been made by which apples may be automatically and uniformly sliced so that the core-hole shall be in the center of each slice without handling each apple separately and placing it by hand in position so that it may meet the knives properly. My device renders the separate handling of the apples unnecessary, produces slices of uniform thickness, and, having the core-hole in the center of each, produces a minimum of scraps, and is rapid in action.

My device slices apples at the rate of several bushels per minute and produces the uniform product just described.

It will readily be seen that my invention consists not only in the apparatus particularly described herein, but also in the method of its operation in causing a cored and peeled apple to roll freely until it settles upon a flat space in a position of stable equilibrium, (with the core-hole vertical,) and then forcing it against a series of successive slicing-knives, preferably producing a shearing cut and retaining it in the same relative position until it is wholly sliced.

What I claim is—

1. In a rotary vegetable-slicer of the class described, an annular channel of suitable length having an aperture across the bottom thereof, said aperture having set therein a series of inclined slicing-knives, one of said knives having its cutting-edge continuous, or nearly so, with a radius of the circle of said channel and the remainder of said knives having their cutting-edges set parallel with said radius, in combination with one or more sweeps moving around in said channel, for the purpose described.

2. In a rotary vegetable-slicer of the class described, a revoluble wheel provided with one or more sweeps attached to its periphery, moving in an annular channel of suitable length, having a plane bottom, in combination with a set of inclined slicing-knives fixed in an aperture across the bottom of said channel, one of said knives having its cutting-edge continuous, or nearly so, with a radius of the circle of said channel and the remainder of said knives having their cutting-edges set parallel with said radius, for the purpose described.

3. In a rotary vegetable-slicer, the combination of a set of slicing-knives fixed across an aperture in the flat bottom of an annular channel of suitable length, with one or more sweeps moving around in said channel, whereby the sweeps cause the vegetable to roll along said bottom and to settle and slide in a position of stable equilibrium before meeting the slicing-knives.

4. In a rotary vegetable-slicer of the class described, a series of inclined slicing-knives set in an aperture across the bottom of an annular channel of suitable length, one of said knives having its cutting-edge continuous, or nearly so, with a radius of the circle of said channel and the remainder of said knives having their cutting-edges set parallel with said radius, in combination with one or more sweeps moving around in said channel, the horizontal medial line of each sweep being inclined from the inner end thereof at an angle to said radius in the direction of motion, and the plane of each sweep being inclined from the bottom of said channel in the direction of motion, for the purpose described.

5. The herein-described method of slicing cored and peeled apples, consisting in causing them to roll along a channel of suitable length until they settle in a position of stable equilibrium, then causing them to slide in this position, and then forcing them against a set of successive slicing-knives.

6. The herein-described method of slicing cored and peeled apples by causing them to roll along a channel of suitable length until they settle with the core-hole vertical to the bottom of the channel and then causing them to slide in this position against a set of suitable slicing-knives.

7. In a rotary vegetable-slicer, an annular channel of suitable length having a plane bottom, a set of sweeps moving around in said channel, in combination with a set of slicing-knives fixed across an aperture in the bottom of said channel, each one of which knives is crossed by a sweep at a different angle from the next preceding knife.

8. In a rotary vegetable-slicer, an annular channel of suitable length having a plane bottom, a set of sweeps moving around in said channel, in combination with a set of slicing-knives fixed across an aperture in the bottom of said channel, the knives being so set that the angles of the successive knives first decrease and then increase with reference to the sweep as it crosses the same.

Dated at Rochester, New York, this 12th day of February, 1889.

CONRAD SCHNETZER.

Witnesses:
C. D. KIEHEL,
JAMES J. ALLEN.